SERVICE MANUAL

STEREO TUNER

SANYO

JT250L
(EUROPE)

This is a service manual for model JT250L and only items changed from model JT300L are indicated. For other items, refer to Service Manual for model JT300L (WM-8681).
mark represents a non-interchangeable part.

Key No.	JT300L	JT-250L	Description	Remark
	(PACKING & ACCESSORY)			
	141-6-133T-39902	141-6-133T-46201	Individual Carton	#
	141-6-410T-83302	141-6-410T-83308	Instruction Manual	#
	(CABINET)			
1	141-0-122T-46201	141-0-122T-46205	Front Panel Assy	#
4	141-2-163T-81330	141-2-163T-81340	Rotary Knob, Timing	#
5	141-2-163T-91900	141-2-163T-91930	Rotary Knob, Selector	#
	(CHASSIS)			
12	141-2-126T-41102	141-2-126T-41109	Back Lid	#
16	141-2-160T-09700	141-2-160T-09701	Push Button, MONO/STEREO	#
17	141-2-160T-16500	141-2-160T-16501	Push Button, POWER SW	#
27	141-2-247T-11800	Not used	Sheet	

Add this sheet to Model JT300L Service Manual.

SANYO ELECTRIC TRADING CO., LTD.
33, Hiyoshi-cho 2-chome, Moriguchi-shi, Osaka-fu, 570 Japan.

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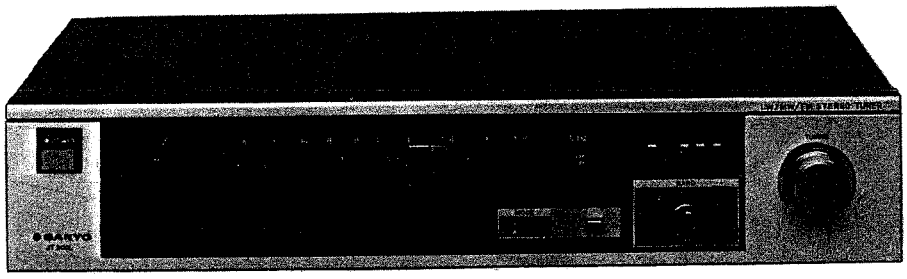
SERVICE MANUAL

SANYO

STEREO TUNER

JT 300L

(EUROPE)



SPECIFICATIONS

NOTE:
The below mentioned specifications are mainly based on the IHF measurements standard. They can therefore not directly be compared with specifications based on the DIN standard or other standards.

FM section

Frequency range	87.5 – 108 MHz (nominal)
Usable sensitivity	2.0μV (mono)
Signal to noise ratio (1 mV ANT.)	70 dB (mono)
Hermonic distortion (1 kHz)	0.2%
Frequency response	30 Hz – 15 kHz
Stereo separation (1 kHz)	40 dB
IF rejection	75 dB
Aerial input	75 ohms unbalanced

AM (MW and LW) section

Frequency range	MW: 531 – 1602 kHz
	LW: 150 – 285 kHz
Sensitivity (ferrite aerial)	MW: 350 μV/m, LW: 500 μV/m
Signal to noise ratio (5 m V/m)	MW: 40 dB
Selectivity	30 dB

General

Power requirements	AC: 18 V, 50 Hz
Power consumption	AC: 18 V, 300 mA (maximum)
Dimensions (Approx.)	420 x (W) x 220 (D) x 85 (H) mm
	(16-1/2" x 8-5/8" x 3-3/8")
Weight (Approx.)	2.6 kg (6 lbs.)

* Specifications subject to change without notice.

NOTE:

The power switch is mounted on the secondary side and does not disconnect the set from AC-power, even when switched off.

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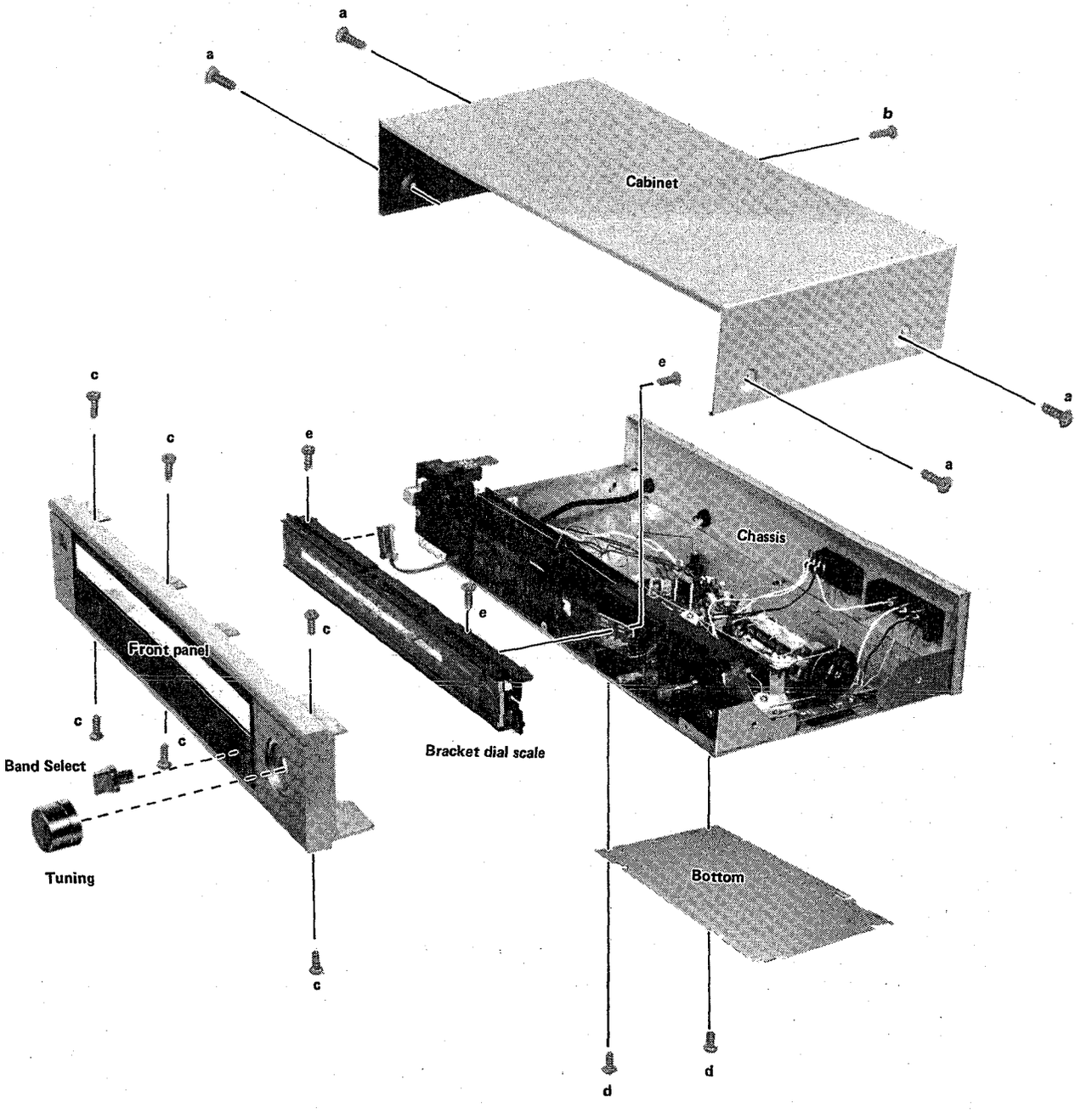
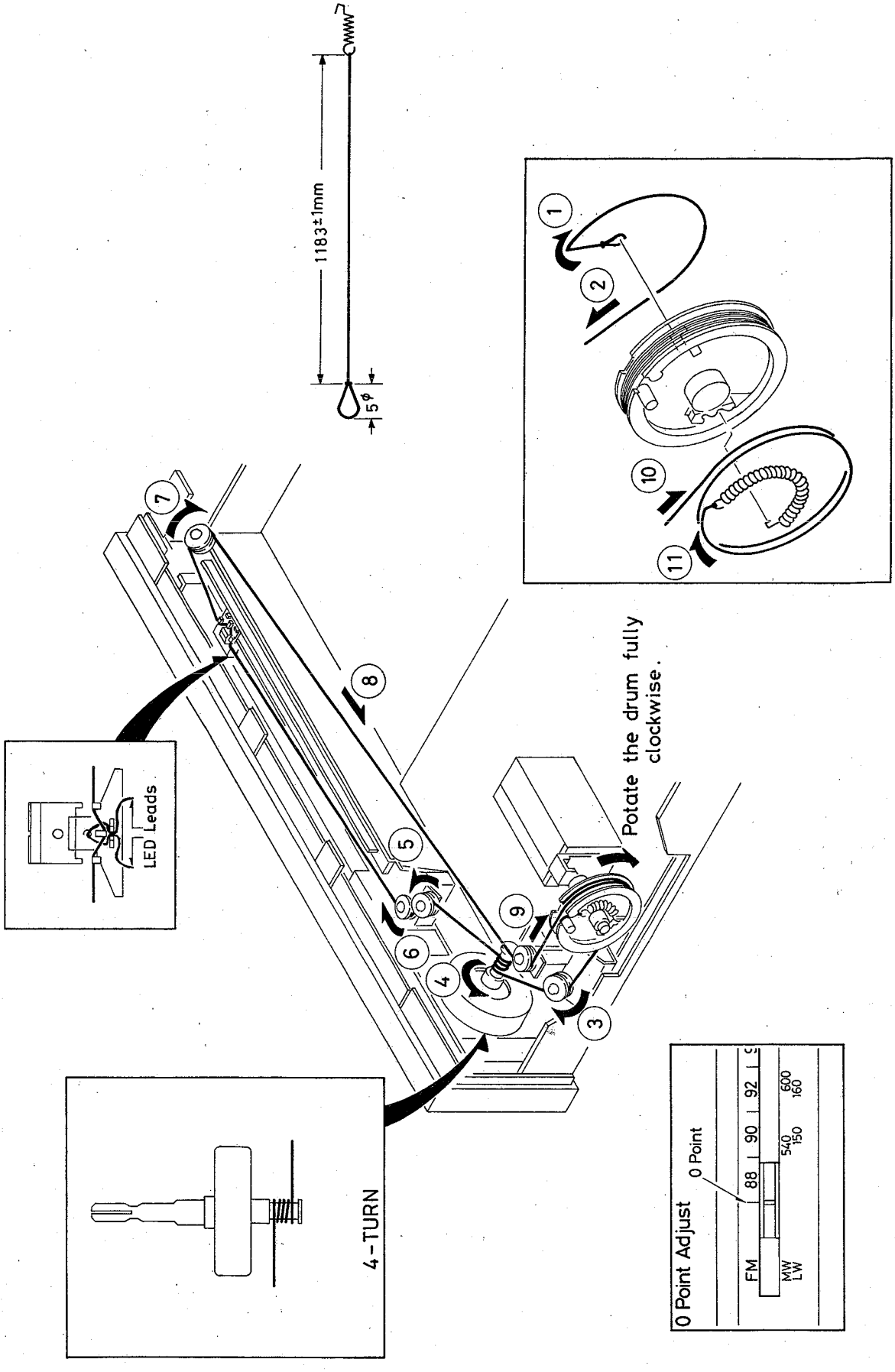
HOW TO REMOVE THE PANEL

Pull out the power cord from outlet.

1. Cabinet
   Remove Four screws "a" (binding head tapping Screw 4 x 8 mm) and one screw "b" (binding head tapping screw 3 x 8 mm) securing the cabinet.
2. Front panel
   Pull out rotary knobs (Tuning and Band Select).
   Remove six screws "c" (binding head tapping screw 3 x 10mm) securing the front panel.
3. Bottom lid
   Remove two screws "d" (binding head tapping screw 3 x 6mm) securing the bottom lid, and slide the lid from left side.
4. Bracket dial scale.
   Remove three screws "e" (binding head tapping screw 3 x 8mm) securing the bracket dial scale.



DIAL ROPE STRINGING



ALIGNMENT PROCEDURES

GENERAL ADJUSTMENT CONDITION

1. AC voltage is 18V and output power 500mV.
2. Use a screw dirver with plastic grip for all adjustment.
3. Signal input must be kept as low as possible to avoid overlord.
4. Use an output meter of the highest possible sensivity.

FM ADJUSTMENT

● Band selector switch "FM" position.

Standard modulation frequency : 1000 Hz ± 40kHz dev. 20 ~ 25dB

Step	Adjustment circuit		Input condition: Measuring instrument (Frequency)		Input condition: Condition point (Input strenght)	Position of Tuning dial	Output condition: Measuring instrument	Output condition: Condition point	Adjustment Point	Adjustment procedure
1	IF.	V	FM Sweep genarator (10.7 MHz) ⬇ Non modulation		TP-3 (H), TP-4(E) Low level	Lowest end (Where no incoming Signal)	V. T. V. M. Oscilloscope	TP–5 (H) TP–7 (E)	T–201 T–202 T–203 T–204	● Match wave-form with center of ceramicfilter. ● Used the 300 ohms dummy antenn. ● Ajust for maximum sensitivity with symmetrical curve.
		S						TP–6 (H) TP–7 (E)	T–205	● Adjust for symmetrical "S" curve.
2	OSC.	Low	FM Signal generator	87.4 MHz	External antenna [300 ohms] (20 ~ 25dB)	Lowest end	V. T. V. M. Oscilloscope Distortion meter	Output terminal	L104	● Adjust until the distortion factor becomes minimum with the output value at the maximum.
		High		108.25 MHz		Highest end			CT–3	
3	ANT.	Low	FM Signal generator	90 MHz	External antenna [300 ohms] (20 ~ 25dB)	90 MHz	V. T. V. M. Oscilloscope Distortion meter	Output Terminal	L101 L102	● Turn in SG and unit, and adjust so that the distortion factor becames minimum at the maximum output value.
		High		106 MHz		106 MHz			CT–1 CT–2	
4	VCO (19KHz)		FM Signal generator (98MHz) (Non modulation)		External antenna (72dB) [300ohm]	98 MHz	Frequency Counter	TP–9 (H) TP–7 (E)	SVR302	● Set the function switch to "Stereo" ● Turn in SG and unit. ● Adjust for 19 kHz ± 30 Hz.
5	Separation		FM Signal generator (98 MHz) + Stereo modulator		External antenna [300 ohms] (66dB)	98 MHz	V. T. V. M. OSCilloscope Distortion meter	Output Terminal	SVR301	● Set the function switch to "Stereo". ● Measure the voltage leakage for each channel separately and adjust for optimum separation and balance.
6	Signal meter		FM signal generator (98 MH)		External antenna [300 ohms] (60dB) External antenna [300 ohms] (59dB)	98 MHz	V. T. V. M. OSCilloscope Distortion meter	Output Terminal	SVR201	● Set SG in 98 MHz, and tune in by turning the tuning dial so that the distortion factor becomes the minimum. ● Set attennator of SG to 59 dB and adjust the SVR302 until (3) go out of signal indicator.

Note: The tuning point should be the output dip point at 4 kHz modulation.

MW ADJUSTMEN

● Band selector switch "MW" position.

Standard modulation frequency: 1000 Hz 30% 75 ~ 85dB

Step	Adjustment circuit		Input condition: Measuring instrument (Frequency)		Input condition: Condition Point (Input strenght)	Position of Tuning dial	Output condition: Measuring instrument	Output condition: Condition point	Adjustment Point	Adjustment procedure
1	I F.		AM Sweep generator (460 kHz)		IRE Loop antenna (Low level)	Lowest end (Where no incoming Signal)	V. T. V. M. Osilloscope.	TP–8 (H) TP–7 (E)	T–206 T–207 T–208	● Adjust for maximum. ● Repeat Adjustment.
2	OSC.	Low	AM Signal generator	510 MHz	IRE Loop antenna	Lowest end	V. T. V. M. Oscilloscope	Output Terminal	L106	
		High		1700 kHz		Highest end			CT–5	
3	ANT.	Low	AM Signal generator	600 kHz	IRE Loop antenna	600 kHz	V. T. V. M. Oscilloscope	Output terminal	L105	
		High		1400 kHz		1400 kHz			CT–4	

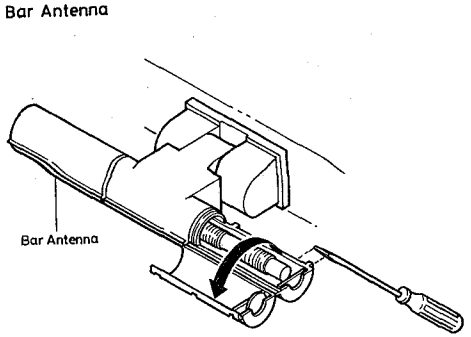
Note: The Tuning point should be the mimimum distortion point.

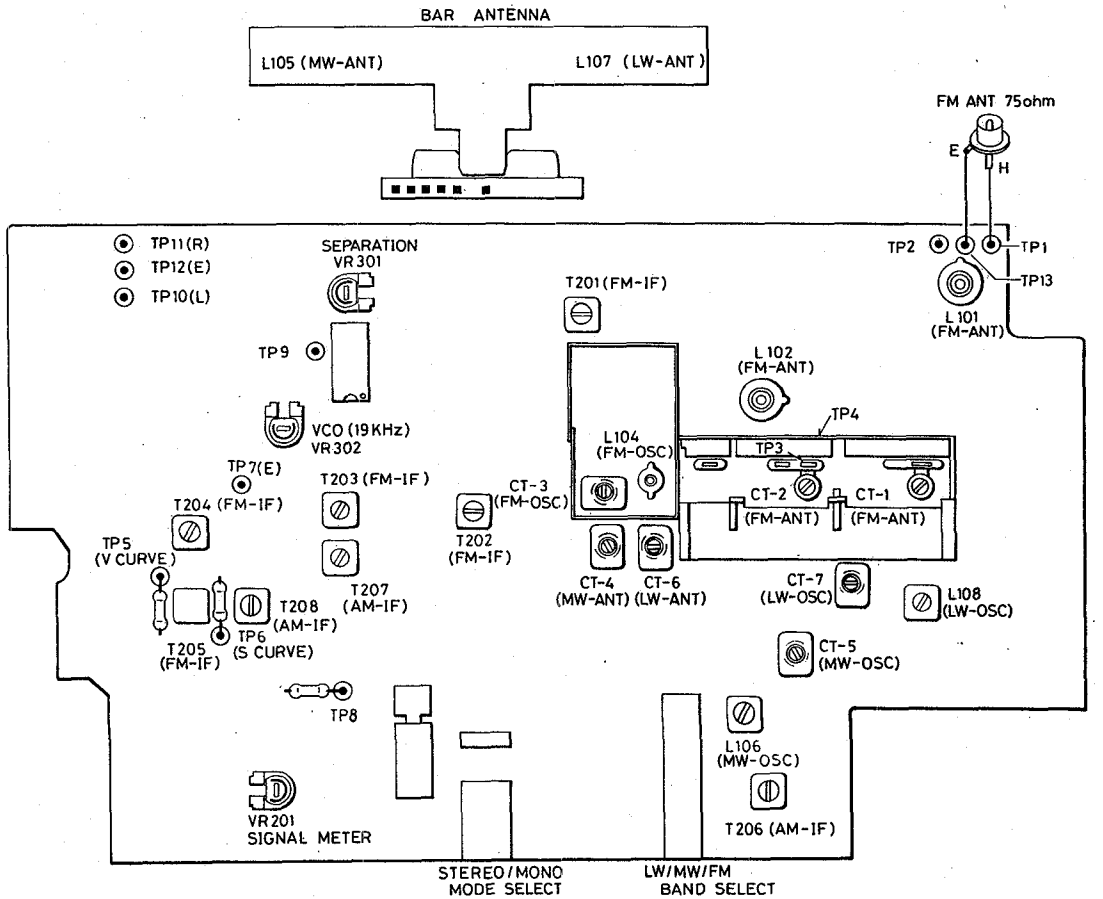
ALIGNMENT PROCEDURES

LW ADJUSTMEN • Band selector switch "LW" position. Standard modulation frequency: 1000 Hz 30% 75 ~ 85dB

Step	Adjustment circuit		Input condition: Measuring instrument (Frequency)		Input condition: Condition Point (Input strenght)	Position of Tuning dial	Output condition: Measuring instrument	Output condition: Condition point	Adjustment Point	Adjustment procedure
1	OSC.	Low	AM Signal generator	140 kHz	IRE Loop antenna	Lowest end	V. T. V. M. Oscilloscope	Output Terminal	L108	• Adjust for maximum.
		High		300 kHz		Highest end			CT–7	
2	ANT.	Low	AM Signal generator	160 kHz	IRE Loop antenna	160 kHz	V. T. V. M. Oscilloscope	Output terminal	L107	• Repeat Adjustment.
		High		280 kHz		280 kHz			CT–6	

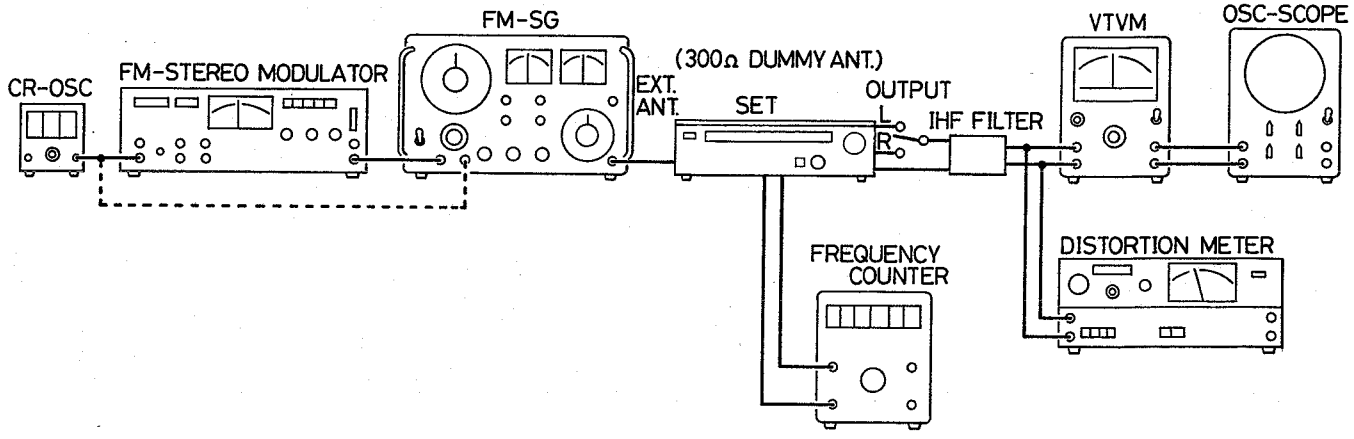
PARTS LOCATION



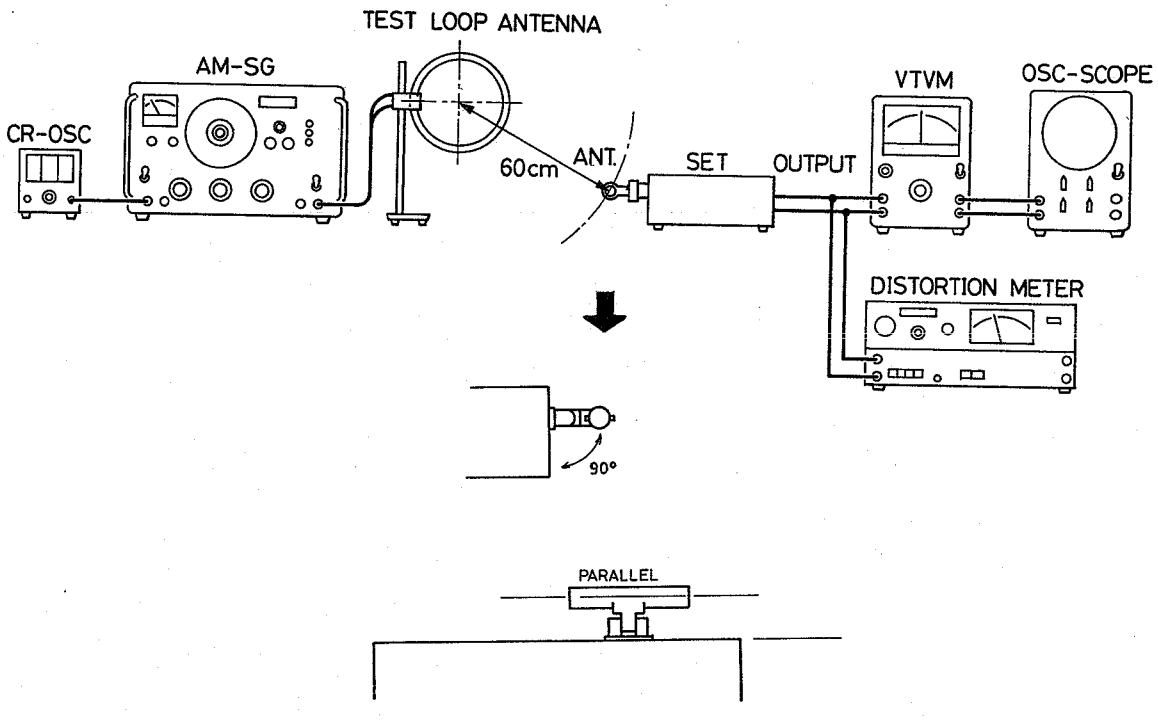


ADJUSTMENT CONNECTIONS

FM ADJUSTMENT CONNECTIONS



AM ADJUSTMENT CONNECTIONS



PARTS LIST

Ref. No.	Part No.	Description	Q'ty
PACKING & ACCESSORY			
	141-6-133T-39902	Individual Carton	1
	141-6-144T-85000	Foam Plastic Case	1
	141-6-231T-35600	Inner Polye Cover, Set	1
	141-6-231T-25350	Inner Polye Cover, Inst. M	1
	141-6-331T-11600	Protector Sheet	1
	141-6-415T-23500	Notice	1
	141-6-415T-32301	Notice	1
	141-6-410T-83302	Instruction Manual	1
	4-245T-00700	Antenna	1
CABINET			
1	141-0-122T-46201	Front Panel Ass'y	1
2	141-2-111T-54900	Cabinet	1
3	141-2-125T-25900	Bottom Lid	1
4	141-2-163T-81330	Rotary Knob, Tuning	1
5	141-2-163T-91900	Rotary Knob, Selector	1
6	141-2-174T-11200	Stand	2
CHASSIS			
11	141-2-221T-10600	Bracket Panel	1
12	141-2-126T-41102	Back Lid	1
13	141-2-125T-30100	Bottom Lid	1
14	141-2-146T-30601	Dial Scale	1
15	141-2-231T-01900	Bracket Dial Scale	1
16	141-2-160T-09700	Push Button, MONO/STEREO	1
17	141-2-160T-16500	Push Button, POWER SW	1
18	141-2-511T-24500	Pointer	1
19	141-0-566T-13600	Tuning Shaft Ass'y	1
20	141-2-329T-08600	Reflector	1
21	141-2-538T-13200	Drum	1
22	141-2-855T-38700	Spring Coil	1
23	141-2-340T-05003	Rope	1
24	141-2-447T-96001	Cushion	1
25	141-2-661T-71300	Pulley	4
26	141-0-661T-36300	Pulley Ass'y	1
27	141-2-247T-11800	Sheet	1
28	141-2-421T-20900	Special Screw	4
29	141-2-310T-76000	Bracket, Pulley (Left)	1
30	141-2-472T-01001	Lug	1
31	141-2-464T-14400	Fixer	1
32	141-2-464T-11800	Fixer, AC Cord	1
33	141-2-464T-20600	Fixer, Lead	2
34	141-2-310T-81100	Bracket, Pulley (Right)	1
35	141-2-310T-81200	Bracket, Pulley (Center)	1
36	141-2-852T-43500	Spring Wire	1
37	141-2-247T-12500	Sheet	1
38	141-2-464T-29900	Fixer, Output Lead	1
39	141-2-464T-39500	Fixer, Output Lead	1
40	123-2-472R-00401	Lug, Earth	4
41	141-2-247T-11801	Sheet, Shield Plate	1
FIXING PARTS			
Y 1		Pan. Hd. Tapping Screw 2.3 x 6mm	1
Y 2		Pan. Hd. Tapping Screw W/Washer 3 x 6mm	3
Y 3		Pan. Hd. Tapping Screw W/Washer 3 x 8mm	2
Y 4		Pan. Hd. Tapping Screw 3 x 20mm	1
Y 5		Binding Hd. Screw 3 x 8mm	3
Y 6		Binding Hd. Tapping Screw 3 x 4mm	1
Y 7		Binding Hd. Tapping Screw 3 x 6mm	5
Y 8		Binding Hd. Tapping Screw 3 x 8mm	12
Y 9		Binding Hd. Tapping Screw 3 x 10mm	6
Y10		Binding Hd. Tapping Screw 4 x 8mm	5
Y11		Pan. Hd. Screw W/Spring Washer 3 x 4mm	1

Ref. No.	Part No.	Description	Q'ty
FIXING PARTS			
Y12		Pan. Hd. Screw W/Spring Washer 3 x 8mm	1
Y13		Hexagon Hd. Bolt 2.6 x 6mm	1
Y14		Hexagon Nut 9ϕ	1
ELECTRICAL PARTS			
51	4-257T-52701	Antenna Coil Ass'y	1
52	4-243T-19974	Lead Cord	1
53	4-236T-20000	Plug	1
54	4-240T-32800	Socket	1
TUNER P. C. B. ASS'Y			
71	141-4-250T-15704	P.C.B. Ass'y, Tuner	1
	4-224T-08372	Variable Capacitor	1
CT3,4,5	4-224R-11600	Trimmer	3
CT6,7	4-224T-15471	Trimmer	2
L101	4-265T-03700	V H F Coil	1
L102	4-265T-03800	V H F Coil	1
L103	4-265R-15100	V H F Coil	1
L104	4-265T-51340	V H F Coil	1
L106	4-258T-28640	O S C Coil	1
L108	4-258T-28840	O S C Coil	1
L109	4-253T-15014	O S C Coil	1
T201	4-256T-05140	I F T	1
T202,203	4-256R-19540	I F T	2
T204	4-256T-04540	I F T	1
T205	4-256T-04040	I F T	1
T206,207	4-256R-00141	I F T	2
T208	4-256R-00241	I F T	1
T301	4-255T-02900	MX Coil	1
CF201,202	4-256T-81000	I F Filter	2
	141-2-322T-40800	Shield Plate	1
	141-2-322T-18900	Shield Plate	1
	141-2-322T-72101	Shield Plate	1
S1	4-238T-58200	Rotary Switch	1
S2	4-238T-39000	Push Switch	1
SVR301	4-222T-97572	Semi-Variable Resistor 1K ohm	1
SVR302	4-222T-97574	Semi-Variable Resistor 5K ohm	1
SVR201	4-222T-97578	Semi-Variable Resistor 100K ohm	1
B101	123-2-471R-10900	Core	1
	4-240T-11200	Socket, 3p	1
	4-240T-11271	Socket, 4p	1
IC301		IC LA3350 S	1
IC302		IC LB1426	1
Q101,106		Transistor 2K212	2
Q102		Transistor 2SC2840	1
Q103,104, 105		Transistor 2SC930 CONV	3
Q107		Transistor 2SC1571	1
Q201,203		Transistor 2SC930 IF	2
Q202		Transistor 2SC930 IF	1
Q301,302, 204		Transistor 2SC536 AUD	3
Q303,304		Transistor 2SC945	2
Q305		Transistor 2SA608	1
Q306		Transistor 2SD325	1
D305		Zener Diode GZA13Y	1
D206		Diode 1S189	1
D203,204		Diode 1S189	2
D207,208		Diode 1S189	2
D201,202, 102,103, 101,205, 301,302		Diode DS442X	8
D303		Diode DS17	1
D304		Diode DS18	1
	CAPACITORS		
C107		Ceramic 1pF NPO ±0.5pF 50V	1
C209		Ceramic 2pF ±0.25pF 50V	1
C106		Ceramic 3pF NPO ±0.25pF 50V	1
C206		Ceramic 6pF ±0.25pF 50V	1
C114		Ceramic 10pF NPO ±0.5pF 50V	1
C108		Ceramic 6pF NPO ±5% 50V	1
C116		Ceramic 15pF ±5% 50V	1

PARTS LIST

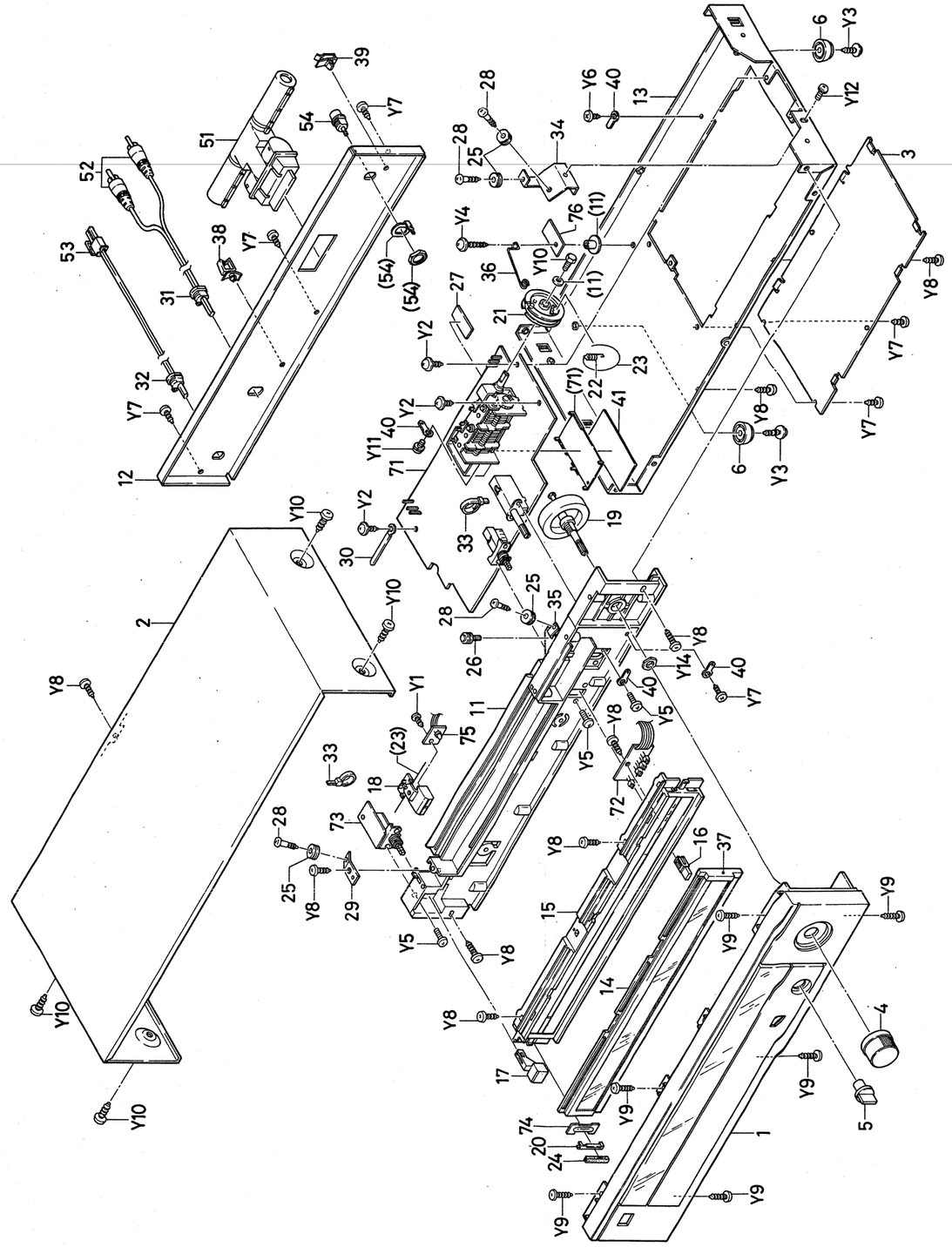
Ref. No.	Part No.	Description	Q'ty
TUNER P. C. B. ASS'Y			
	CAPACITORS		
C121		Ceramic 15pF N1500 ±10% 50V	1
C101		Ceramic 18pF N220 ±5% 50V	1
C105		Ceramic 18pF N220 ±5% 50V	1
C113		Ceramic 18pF N220 ±5% 50V	1
C102		Ceramic 20pF ±5% 50V	1
C210		Ceramic 30pF N750 ±5% 50V	1
C115		Ceramic 33pF NPO ±5% 50V	1
C221		Ceramic 100pF ±5% 50V	1
C109		Ceramic 220pF ±5% 50V	1
C216		Ceramic 220pF ±5% 50V	1
C307,311		Ceramic 560pF ±10% 50V	2
C104,217, 218		Ceramic 0.001μF ±10% 50V	3
C204,208		Ceramic 0.0047μF ±10% 50V	2
C124		Ceramic 2p NPO ±0.25pF 50V	1
C130		Ceramic 180pF NPO ±5% 50V	1
C125		Ceramic 33pF ±5% 50V	1
C337		Ceramic 100pF ±5% 50V	1
C132		Ceramic 220pF ±5% 50V	1
C140		Ceramic 47pF ±5% 50V	1
C141,143		Ceramic 0.01μF +80–20% 50V	2
C142		Ceramic 0.022μF +80–20% 50V	1
C103,110, 111,112, 117,201, 202,203, 325,333, 334,335, 336,133		Ceramic 0.01μF +80–20% 50V	14
C112,205, 207,211, 212,213, 223,225, 316,222		Ceramic 0.022μF +80–20% 50V	10
C127		BC Con 0.0033μF ±20% 50V	1
C308,312,		BC Con 0.0022μF ±20% 25V	2
C118,119, 219,220		BC Con 0.01μF ±20% 25V	4
C315		BC Con 0.047μF ±20% 25V	1
C310,314		BC Con 0.0033μF ±20% 25V	2
C302,303		BC Con 0.015μF ±20% 25V	2
C227		BC Con 0.047μF ±20% 25V	1
C120		Styrol 340pF ±5% 50V	1
C317		P P Con 0.0015μF ±5% 100V	1
C228		BC Con 0.01μF ±20% 25V	1
C332		Electrolytic 470μF 25V	1
C329		Electrolytic 470μF 16V	1
C301		Electrolytic 220μF 16V	1
C331		Electrolytic 100μF 25V	1
C214,330		Electrolytic 100μF 16V	2
C328		Electrolytic 10μF 16V	1
C229		Electrolytic 4.7μF 25V	1
C215,224, 306,326, 321,324		Electrolytic 4.7μF 25V	6
C309,313		Electrolytic 0.1μF 50V	2
C320,327		Electrolytic 1μF 50V	2
C304,305		Electrolytic 0.1μF 50V	2
C318,322		Electrolytic 0.47μF 50V	2
C323		Electrolytic 1μF 50V	1
C319		Electrolytic 0.22μF 50V	1
C226		Electrolytic 10μF 25V	1
C128		Styrol 250pF ±5% 50V	1
C126		BC Con 0.0022μF ±20% 25V	1
	RESISTORS All Resistors are Carbon T-type ±5%, ¼W, unless otherwise noted.		
R102,117, 128		10 ohm	3
R112,211, 124		56 ohm	3
R108,116, 209,326, 329,121		100 ohm	6
R216		180 ohm	1
R206		220 ohm	1
R103,104		270 ohm	2

Ref. No.	Part No.	Description	Q'ty
TUNER P. C. B. ASS'Y			
R120,207, 133,210, 339,312, 316,		330 ohm	7
R212		470 ohm	1
R201		560 ohm	1
R208		680 ohm	1
R118,217, 218,219, 220,224		1K ohm	6
R215,324, 205		1.5K ohm	3
R334,335, 336		33 ohm	3
R308,309		2.2K ohm	2
R111		2.7K ohm	1
R107,115, R303,304, 305,321		3.3K ohm	6
R325,122		5.6K ohm	2
R318,319		4.7K ohm	2
R105,221, 222		5.6K ohm	3
R306,307, 310,314, 320		8.2K ohm	5
R114,213, 126,132, 331,223, 344		10K ohm	7
R233		1.2K ohm	1
R127,231, 234,134		3.3K ohm	4
R135,130		1K ohm	2
R110,119		12K ohm	2
R109,204, 226,333		15K ohm	4
R106,203, 225,302		22K ohm	4
R113,125		39K ohm	2
R322,328, 229		56K ohm	3
R332		68K ohm	1
R214		82K ohm	1
R101,227, 228,313, 317		100K ohm	5
R327		150K ohm	1
R123		100K ohm	1
R230		27K ohm	1
R323		18K ohm	1
R311,315		470K ohm	2
R330		1M ohm	1
R232		390K ohm	1
R301		Solid 82 ohm P-type ½W, ±10%	1
R337		100 ohm P-type ½W, ±10%	1
R340		Solid 390 ohm P-type ½W ±10%	1
R338		FP 5.6 ohm P-type ¼W ±5%	1
R341		Metal 150 ohm P-type 2W ±5%	1
R342		Solid 470 ohm P-type ½W ±10%	1
R131		390K ohm	1
METER LED P. C. B. ASS'Y			
72	141-4-250T-64200	P.C.B. Ass'y, Meter LED	1
D401		LED SIP151B Red	1
D402,403, 404		LED SLP251B Green	3

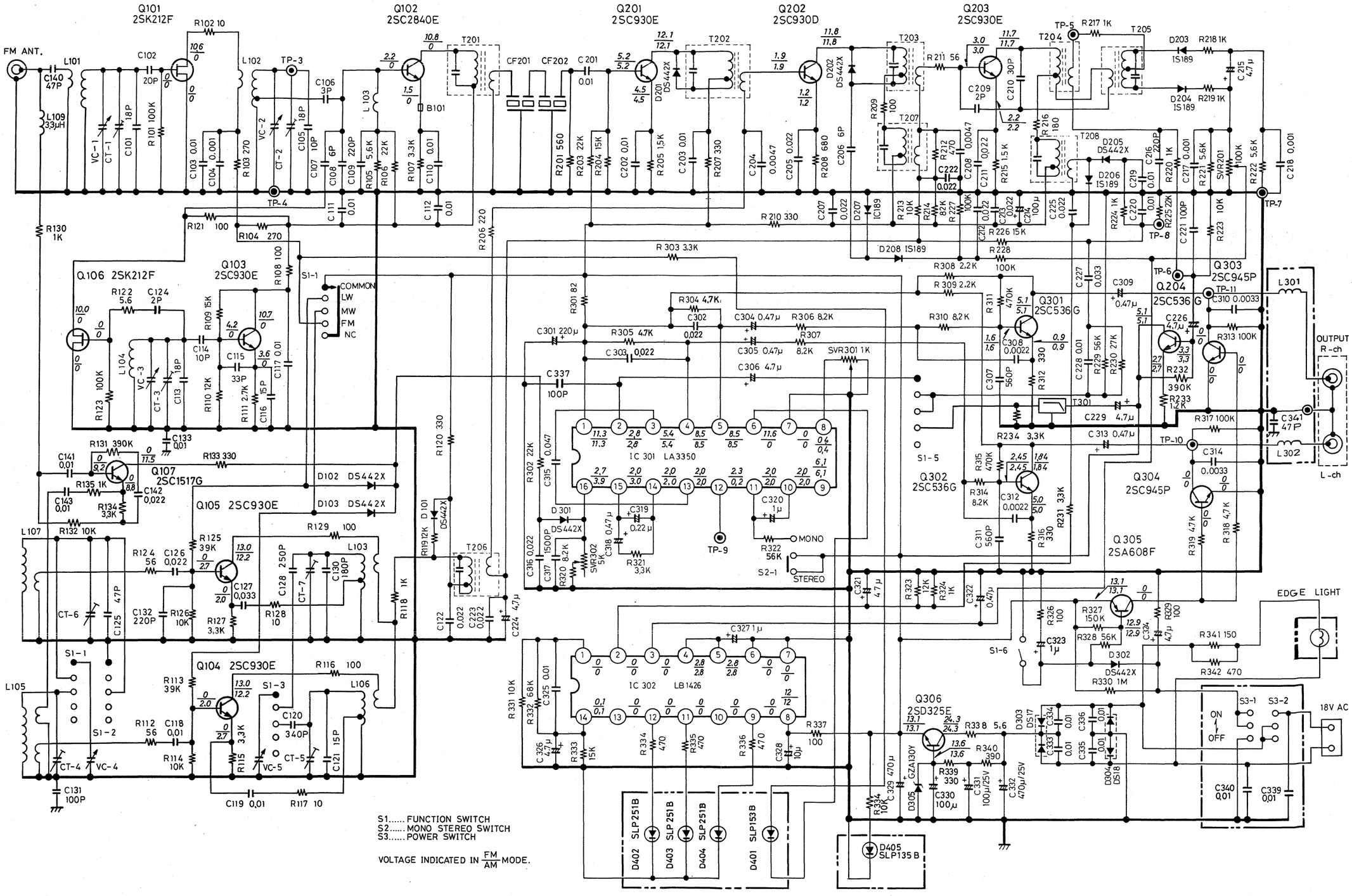
PARTS LIST

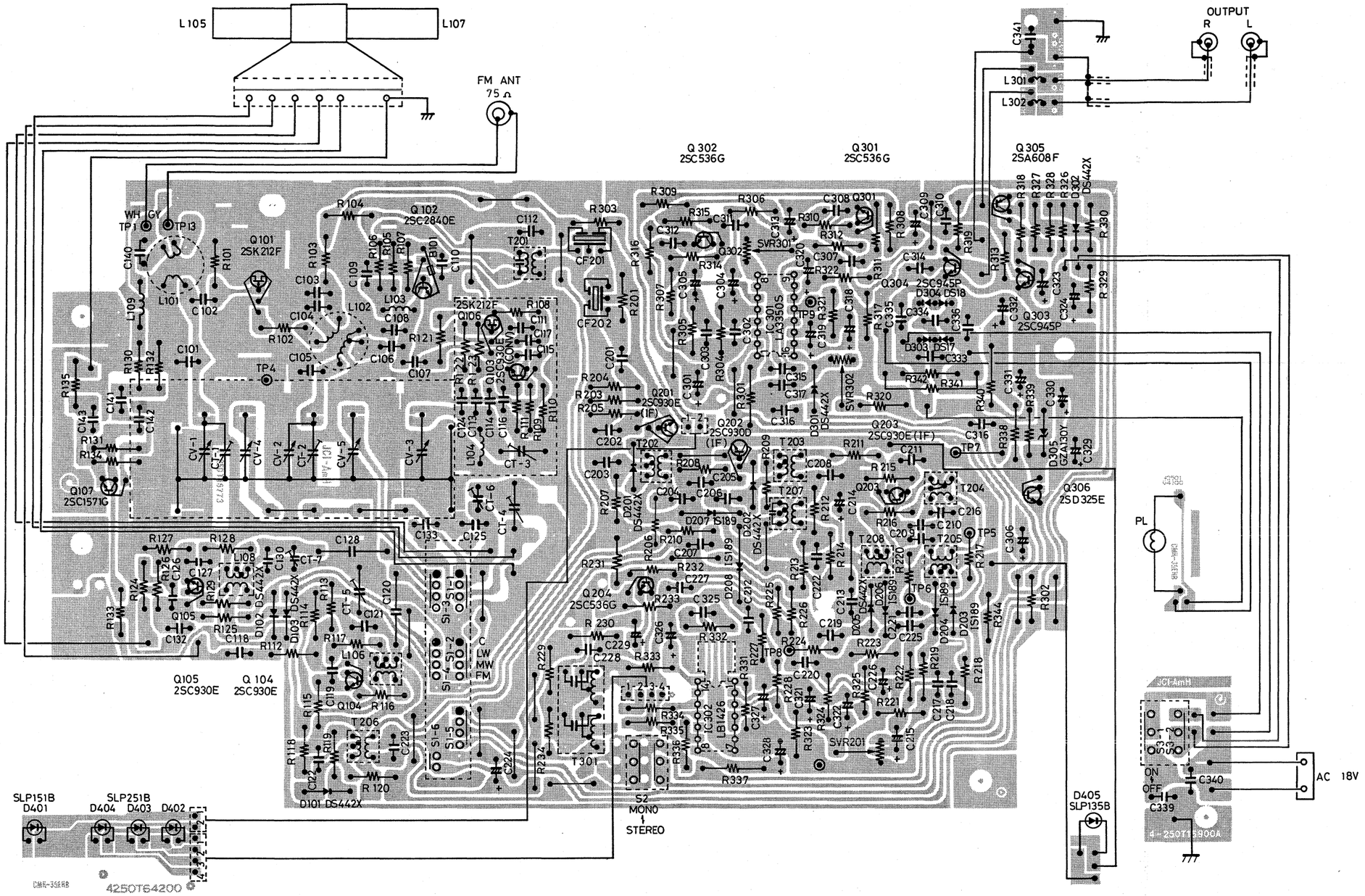
Ref. No.	Part No.	Description	Q'ty
POWER SWITCH P. C. B. ASS'Y			
73	141-4-250T-15901	P.C.B. Ass'y, Power Switch	1
S3	4-238T-41200	Push Switch	1
C339,340		Ceramic 0.01μF +80–20% 50V	2
LAMP P. C. B. ASS'Y			
74	141-4-250T-64300	P.C.B. Ass'y, Lamp	1
	4-612T-17400	Lamp	1
POINTER LED P. C. B. ASS'Y			
75	141-4-250T-18902	P.C.B. Ass'y, Pointer LED	1
		LED SLP135BB Red	1
OUTPUT P. C. B. ASS'Y			
76	141-4-233T-22502	P.C.B. Ass'y, Output	1
L301,302	4-265R-12600	V H F Coil	2
C341		Ceramic 47pF ±10% 50V	1

EXPLODED VIEW

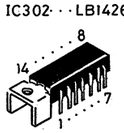


SCHEMATIC DIAGRAM

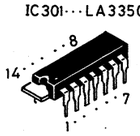




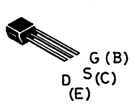
IC302 · · · LB1426



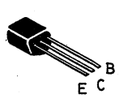
IC301 · · · LA3350



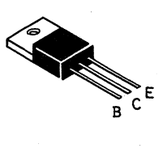
Q101, Q106 · · · 2SK212
Q102 · · · 2SC2840



Q103, Q104, Q105
Q201, Q202, Q203 · · 2SC930
Q204, Q301, Q302 · · 2SC536
Q303, Q304 · · 2SC945
Q305 · · 2SA608

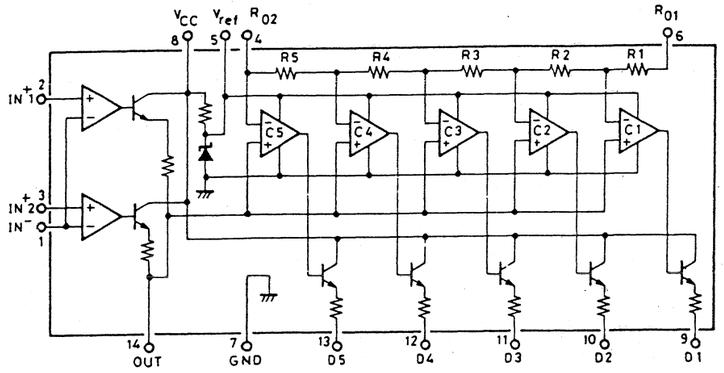


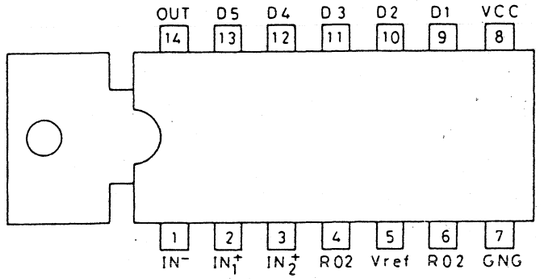
Q306 · · 2SD325



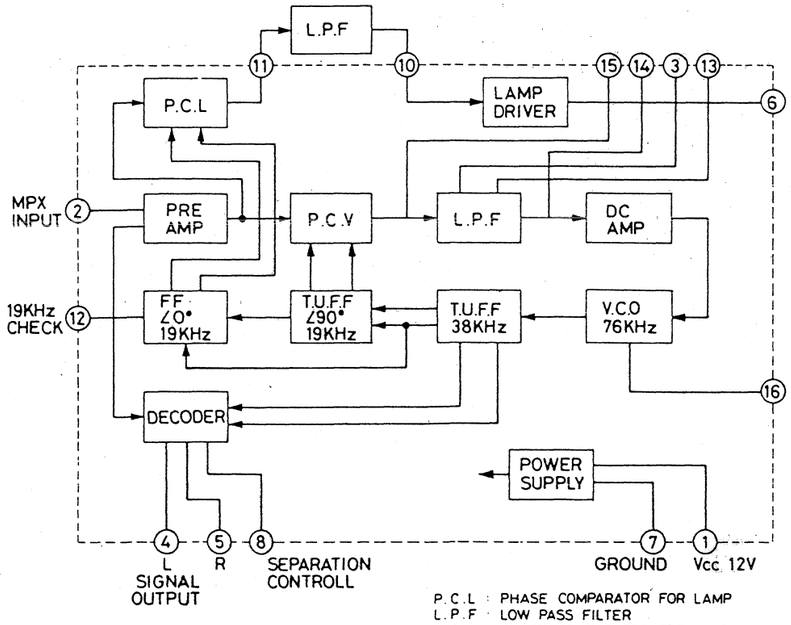
IC BLOCK DIAGRAM

LB1426 (5 DIGITS LEVEL METER DRIVER)





LA3350



(PLL FM Multiplex Stereo Demodulator)

P.C.L : PHASE COMPARATOR FOR LAMP
L.P.F : LOW PASS FILTER
P.C.V : PHASE COMPARATOR FOR V.C.O
V.C.O : VOLTAGE CONTROLLED OSCILLATOR
T.U.F.F : DIRECT COUPLED TYPE FLIP-FLOP

SANYO ELECTRIC TRADING CO., LTD.
33, Hiyoshi-cho 2-chome, Moriguchi-shi,
Osaka-fu, 570 Japan.

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